FACT SHEET

EPA Region 7

Mine Waste
Madison County, Missouri

October 1999

Introduction

The U.S. Environmental Protection Agency (EPA) Region 7 is providing this fact sheet as a public guidance on mine waste usage in Madison County. Some residual wastes from mining are a commercial commodity and have been used for many years. Proper use of the wastes can reduce some threats to the environment and to human health that currently exist. Removing chat piles and covering tailings can also bring non-productive land back to beneficial and safe use. However, improper uses of mine wastes may increase the threat to human health and the environment. The ultimate use of the material should not allow people, and in particular young children, to easily come into contact with the material.

Site Background

Historic lead and zinc mining occurred in an area known as the Old Lead Belt, which covers about 110 square miles in southeastern Missouri. The first recorded mining occurred in the Old Lead Belt in about 1742. The production increased significantly in the Old Lead Belt during the mid-1800s and lasted up to 1972. Currently, production still occurs in the Viburnum Trend, in southeastern Missouri, and additional mining is proposed in the area. Mining and milling of ore produced more than 250 million tons of wastes in the Old Lead Belt. Today, approximately 60 million tons of mine waste remains in the Old Lead Belt. EPA Region 7, the state of Missouri, local communities, and private companies are working together to seek solutions to the potential adverse impacts of these mine wastes which are contaminated with lead, zinc, cadmium, and other metals.

Chat and Tailings

Ore production consisted of crushing and grinding the rock to standard sizes and separating the ore. Ore processing was accomplished in either a dry gravity separation or through a wet flotation separation. Dry processes produced a fine gravel waste commonly called “chat.” The flotation process resulted in the creation of tailings ponds used to settle out material from solution. The wastes from flotation are typically sand and silt size and are called “tailings.” Milling resulted in large chat waste piles and in flat areas with tailings deposited some depth below the ground surface. Tailings

are generally held in a dammed impoundment and contain higher concentrations of heavy metals and therefore present a higher risk to human health, through ingestion, and the environment.

Another prevalent source of mine waste is called development rock. Development rock is the waste rock generated in drilling shafts to the deep mines and therefore did not come from the major ore producing rocks. Typically, development rock consists of large boulders. Smelters also operated and continue to operate in Missouri, but this fact sheet does not address smelter related wastes.

Legal Considerations

If waste material is used in a way that creates a threat to human health or the environment, the owner of the property and the party responsible for creating this threat could be liable for cleanup under the Superfund law. Because these mine wastes often contain lead, cadmium, zinc or other metal contaminants at levels that present a risk to both human health and the environment, using them in situations that would allow people to regularly come into contact with the material could result in unacceptable situations, which could be considered a Superfund problem. The property owners, haulers, operator, and individuals or businesses that sell, buy, or use mine waste materials need to ensure they are using the materials in a manner that prevents direct contact by people and is not detrimental to the environment.

Typical uses

EPA and the state of Missouri are willing to provide assistance in reviewing specific uses of mine wastes but have no formal approval procedures. The following is a list of typical uses of mine wastes with a general assessment of whether or not the use may result in significant human health or environmental threats. The list represents EPA Region 7's views on acceptable and unacceptable uses of mine wastes.

Mine waste uses that are not likely to present a threat to human health or the environment:

- Applications that bind material into a durable product. These would include its use as an aggregate in batch plants preparing asphalt and concrete (note: other engineering and chemical properties of the chat may not be compatible with its use in concrete.)

- Applied below paving on asphalt or concrete roads and parking lots.

- Applications that cover the material with clean material particularly in areas that are not likely to ever be used for residential or public area development. Examples would include spreading chat around utility pipe in excavated trenches, or placing chat as deep fill on commercial sites.

- Applications that use the material as raw product for manufacturing a safe product, such as in glass or manufacturing.

Mine waste uses that may present a threat to human health or the environment:

- Playground sand or surface material in play areas.
- Driveways, parking lots or roadways or roadway shoulders that are not paved.
- Residential usages in general. The placement in a residential setting could cause a problem in the future if an unknowing person excavated the material and allowed it to be re-exposed. Also, construction of residential homes or siting public use areas, such as parks or playground on or very near mine waste piles may result in unacceptable exposure.
- Public areas in which children play such as parks and school grounds.
- Placement of fill material which comes in contact with free-standing water in an excavation or with surface water.
- Sandblasting.

Additional Information

If you would like additional information about this fact sheet or Superfund mining sites in Missouri, please contact Dana Blubaugh in EPA's Office of External Programs, 901 North 5th Street, Kansas City, Kansas 66101, (913) 551-7003, or call the toll-free environmental action line at 1-800-223-0425.